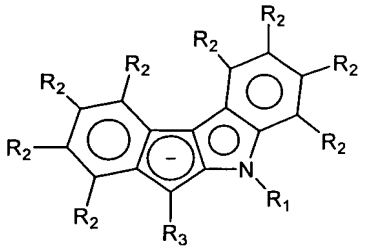
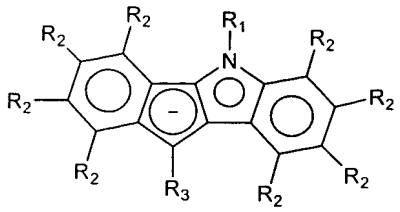
We claim:

1. A process which comprises polymerizing an olefin in the presence of an activator, an organometallic complex, and an aluminum phosphate support, wherein the complex comprises a Group 3 to 10 transition metal, M, and at least one indenoindolyl ligand that is bonded to M.
2. The process of claim **1** wherein the Group 3 to 10 transition metal is a Group 4 transition metal.
3. The process of claim **1** wherein the activator is selected from the group consisting of alumoxanes, alkylaluminum compounds, organoboranes, ionic borates, ionic aluminates, aluminoboronates and mixtures thereof.
4. The process of claim **1** wherein the olefin is selected from the group consisting of ethylene, propylene, 1-butene, 1-pentene, 1-hexene and 1-octene and mixtures thereof.
5. The process of claim **4** wherein the olefin is ethylene in combination with a second olefin selected from the group consisting of 1-butene, 1-hexene and 1-octene.
6. The process of claim **1** wherein the aluminum phosphate has a phosphorus to aluminum molar ratio of about 0.8:1 to about 1.1:1.
7. The process of claim **1** wherein the aluminum phosphate has a surface area of from about 50 to about 250 m^2/gram.
8. The process of claim **1** wherein the polymerization is performed at a temperature within the range of about 20°C to about 100°C.
9. A slurry polymerization process of claim **1**.
10. A gas-phase polymerization process of claim **1**.

11. The process of claim **1** wherein the indenoindolyl ligand has a structure selected from the group consisting of:

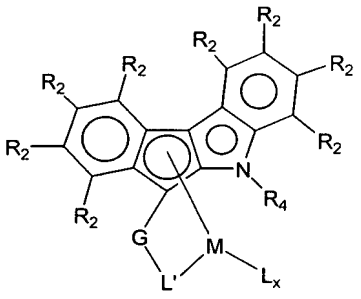


and

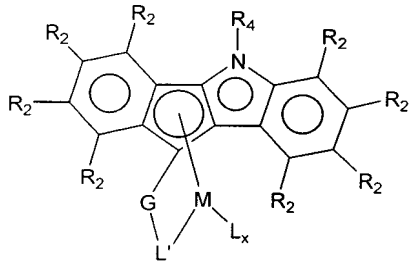


in which R_1 is selected from the group consisting of C_1-C_{30} hydrocarbyl, dialkylboryl, trialkylsilyl and divalent radicals connected to a second ligand; each R_2 is independently selected from the group consisting of C_1-C_{30} hydrocarbyl, H, F, Cl and Br; R_3 is selected from the group consisting of C_1-C_{30} hydrocarbyl, H, and divalent radicals connected to a second ligand wherein one of R_1 or R_3 is a divalent radical selected from the group consisting of hydrocarbyl and heteroatom containing alkylene radicals, diorganosilyl radicals, diorganogermanium radicals and diorganotin radicals.

12. The process of claim **1** wherein the organometallic complex has a structure selected from the group consisting of:



and

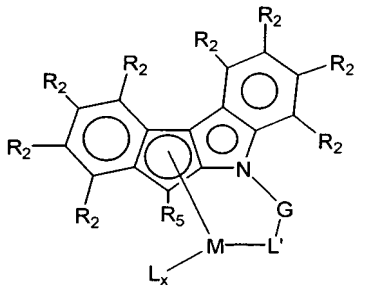


wherein M is a Group 3 to 10 transition metal; each L is independently selected from the group consisting of halide, alkoxy, aryloxy, siloxy, alkylamino, and C_1-C_{30} hydrocarbyl; L' is selected from the group consisting of alkylamido, substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, boraaryl, pyrrolyl, azaborolinyl and indenoindolyl; x satisfies the valence of M; R_4 is

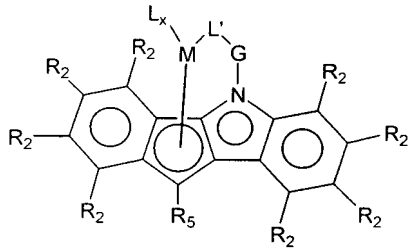
selected from the group consisting of C_1-C_{30} hydrocarbyl, dialkylboryl and trialkylsilyl; each R_2 is independently selected from the group consisting of C_1-C_{30} hydrocarbyl, H, F, Cl and Br; G is a divalent radical selected from the group consisting of hydrocarbyl and heteroatom containing alkylene radicals, diorganosilyl radicals, diorganogermanium radicals and diorganotin radicals.

13. The process of claim **12** wherein L' is selected from the group consisting of substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, and indenoindolyl.

14. The process of claim **1** wherein the organometallic complex has a structure selected from the group consisting of:



and



wherein M is a Group 3 to 10 transition metal; each L is independently selected from the group consisting of halide, alkoxy, aryloxy, siloxy, alkylamino, and C_1-C_{30} hydrocarbyl; L' is selected from the group consisting of alkylamido, substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, boraaryl, pyrrolyl, azaborolinyl and indenoindolyl; x satisfies the valence of M; R_5 is selected from the group consisting of C_1-C_{30} hydrocarbyl and H; each R_2 is independently selected from the group consisting of C_1-C_{30} hydrocarbyl, H, F, Cl and Br; G is a divalent radical selected from the group consisting of hydrocarbyl and heteroatom containing alkylene radicals, diorganosilyl radicals, diorganogermanium radicals and diorganotin radicals.

15. The process of claim **14** wherein L' is selected from the group consisting of substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, and indenoindolyl.

16. The process of claim **1** wherein the activator is directly added to the polymerization reactor.

17. The process of claim **1** wherein the organometallic complex and some or all of the activator are premixed and then combined with the aluminum phosphate.

18. The process of claim **1** wherein the aluminum phosphate and some or all of the activator are premixed and then combined with the organometallic complex.